

YOR8-1999-0148 Post cure hardening of vinyl addition cured siloxane stamps for microcontact printing - continued

SN 09/807,440

**Disclosure YOR8-1999-0148**

Prepared for and/or by an IBM Attorney - IBM Confidential

Created By: Gareth Hougham Created On: 03/02/99 06:34:19 PM

Required fields are marked with the asterisk (\*) and must be filled in to complete the form.

**\*Title of disclosure (in English)**

Post cure hardening of vinyl addition cured siloxane stamps for microcontact printing

**Summary**

Status	Submitted
Processing Location	YOR
Functional Area	700 Systems, Technology & Science-Isaac
Attorney/Patent Professional	Daniel P Morris/Watson/IBM
Submitted Date	03/02/1999 07:15:09 PM EST
Owning Division	RES
Lab	
Technology Code	
PVT Score	

**Inventors with Lotus Notes IDs**

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**Inventors without Lotus Notes IDs****IDT Selection**

IDT Team:	Attorney/Patent Professional: Daniel P Morris/Watson/IBM
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**\*Main Idea**

1. Describe your invention, stating the problem solved (if appropriate), and indicating the advantages of using the invention.

The fabrication of large-area but fine-featured microcontact printing stamps involves molding a relief pattern into the stamp, and presents severe material science challenges by requiring both extreme pattern accuracy and finely-tuned mechanical properties. The reaction of the molding compound during cure can

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be carried out at any temperature from room temperature up to about 120 degrees C. There are advantages and disadvantages associated with any choice of temperature for this cure. If the cure is carried out at room temperature, the dimensions of the pattern can be made to exactly match those of the mold "master". Maintaining this true dimension is critical because such stamps are often used to define the circuitry pattern in multilayer structures where subsequent layers of circuitry will have to exactly register with it. The dimensions can be kept true if cured at room temperature because there is no CTE expansion and contraction to distort the pattern. On the other hand, material hardness is another important feature of the stamp and the siloxane hardness is greater when cured at higher temperatures.

The present invention defines a way to achieve dimensional accuracy and desired hardness. This is achieved by doing a preliminary cure at room temperature to define the geometry of the pattern, followed by a high temperature post cure. Although the stamp will expand as defined by its CTE upon this post cure, it is at this point a durable elastomer, and will fully rebound to the original dimensions upon cooling. Thus, both desirable characteristics can be achieved without sacrificing the other.

2. How does the invention solve the problem or achieve an advantage, (a description of "the invention", including figures inline as appropriate)?
3. If the same advantage or problem has been identified by others (inside/outside IBM), how have those others solved it and does your solution differ and why is it better?
4. If the invention is implemented in a product or prototype, include technical details, purpose, disclosure details to others and the date of that implementation.

**\* Question 1**

On what date was the invention workable? 03/02/1999 Please format the date as MM/DD/YYYY (Workable means i.e. when you know that your design will solve the problem)

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